



---

## **A REVIEW ON: HIV AIDS**

***Santosh Shankar Karande***

L.N.B.C.Institute of pharmacy raigaon, satara

---

### **ABSTRACT:**

HIV/AIDS has constantly been one of the maximum very well international of illnesses. The human immunodeficiency virus (HIV) is a lent virus that causes HIV contamination and AIDS. AIDS is a circumstance in people in which innovative failure of the immune system lets in existence- threatening infections and cancers to thrive. contamination with HIV happens by using the switch of blood, semen, vaginal fluid, breast milk. within these physical fluids, HIV is present as both free virus debris and virus inside inflamed immune cells. HIV infects critical cells in the human immune machine including helper CD4 T cells, macrophages. HIV infection ends in low levels of T cells via some of mechanisms, which include pyroptosis of infected T cells. The symptoms of AIDS are broadly speaking the result of situations that don't generally increase in individuals with healthful immune systems. maximum of these conditions are opportunistic infections because of bacteria, viruses, fungi and parasites which can be usually controlled by way of the factors of the immune gadget that HIV damages. whilst condoms are used constantly by a couple wherein one person is inflamed, the fee of HIV infection is less than 1% in line with year. there may be a few proof to suggest that girl condoms might also offer an equivalent degree of safety.

Keywords: Aids, Hiv, infection, immune, mechanism.

---

### **Introduction:**

HIV is a virus that causes AIDS. commonly, our frame has HIV stands for human immunodeficiency virus. AIDS stands for obtained immuno deficiency syndrome. HIV

H-It infects handiest human beings and also transmitted between humans no longer from animals. It isn't transmitted from bites of mosquitoes, bats or any other species.

I-The body has immune device whose characteristic is to protect our body from germs, infections and so forth. however someone laid low with HIV has lack of ability to fight against sicknesses. however, immune device becomes poor.

V-Virus is a small, only element which is in inactive shape outside the frame and will become active when it goes interior human frame.

### **AIDS**

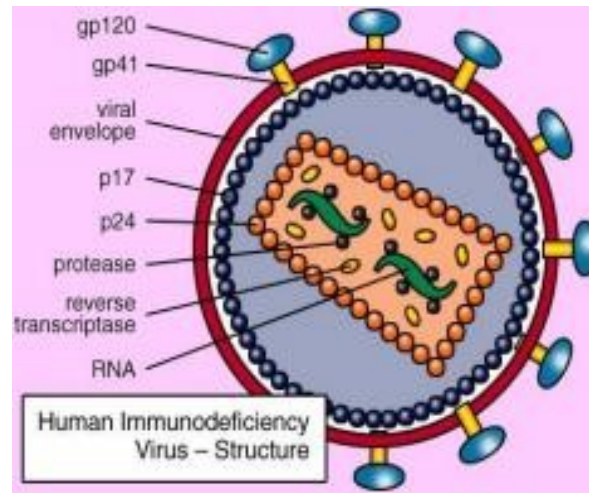
A-It is not inherited way it cannot be transmit from one generation to some other. it's miles transmitted to healthful character by using infected individual.

I-It weakens the immune machine.

D-Creates a deficiency of CD4+ cells within the immune system. S-it's far a group sicknesses.

immune system that assault viruses and bacteria. Immune device has white blood cells which protect us from infections. White blood cells contain CD4+ cells which is likewise referred to as helper cells or T cells. a person who is inflamed will be able to develop. these infections take advantage of body's immune machine. these infections cause several health issues and even result in loss of life of someone. HIV has incapability to shield in opposition to diseases and matter of CD4 cells also decreases in HIV. there's no therapy of AIDS but there are certain drug treatments which are use to slow down the diseases so you live healthier for

long term. there's no medication to take away diseases [1]. HIV is an epidemic that causes AIDS. commonly, our frame has immune system that attack viruses and micro organism. Immune system has white blood cells which guard us from infections. White blood cells contain CD4+ cells which is also known as helper cells or T cells. someone who is infected can be capable of broaden. thin fections take advantage of body's immune gadget. these infections reason several health troubles and even result in death of a person. HIV has inability to shield against sicknesses and count number of CD4 cells additionally decreases in HIV. there is no treatment of AIDS however there are positive medicines that are used to down the disorder so you stay healthier for long term . there may be no remedy to eliminate disesses .[1]

**Structure of HIV Virus****Fig1 structure of HIV virus****GP120**

The a hundred and twenty in its name comes from its molecular weight. it is vital for virus entry into the cells as it performs important function in attachment to unique mobile floor receptors.

**GP41**

it is a subunit of the envelope protein complex of retroviruses consisting of human immuno deficiencies virus. it is circle of relatives of enveloped viruses that reflect in host cell thru procedure of reverse transcriptase. It targets a host cellular.

Viral envelope

it's far envelope through which virus binds.

**P17**

Viral core is crafted from protein. it's far bullet formed. three enzymes required for HIV replication are opposite transcription, integrase and protease.

**P24**

P24 is issue of HIV capsid.

**Protease**

it's far a retroviral aspartyl protease this is crucial for existence cycle of HIV, the retrovirus that brought about AIDS. This enzyme cleaves newly synthesized polyproteins at suitable region to create nature protein additives of infectious HIV virion.

**Integrase**

Enzyme produce by means of retrovirus that allows its genetic fabric to be incorporated into the DNA of infected mobile. RNA All organisms along with maximum viruses shop their genetic fabric on lengthy strands of DNA. Retrovirus is exception because their genes are composed of RNA [2].

**Reasons:**

it's far because of sexual touch from one person to every other character. HIV is a deadly disease. whilst a person turns into inflamed with HIV the virus weakens and damages their frame's defence infections.

it is reason by using:

- a. Sharing drug needles or syringes.
- b. Sexual contact including oral, vaginal or oral who's HIV superb.
- c. Having different sexually transmitted diseases including syphilis, herpes, and gonorrhoea appears to growth the hazard of being inflamed via HIV during unprotected sexual touch with inflamed associate.
- d. infants can be infected via an HIV-advantageous mom throughout pregnancy, delivery and breast feeding.

**Transmission:**

HIV is transmitted mainly in three approaches: by sexual touch, with the aid of blood through transfusion, blood merchandise or infected needles or by passage from mother to baby. even though homosexual contact remains a major supply of HIV within the u.s., "hetero sexual transmission is the most important way of HIV unfold global today." treatment of blood merchandise and donor screening has basically eliminated the risk of HIV from contaminated blood merchandise in advanced nations, however its spread maintains amongst intravenous drug customers who proportion needles. In growing countries, infected blood and infected needles remain crucial approach of infection. thirteen to thirty-5 percent of pregnant girls inflamed with HIV will bypass the infection on to their babies; transmission takes place before in addition to in the course of beginning. Breast milk from infected mothers has been proven to incorporate high levels of the virus additionally.

HIV is not unfold by means of the fecal-oral path; aerosols; insects; or casual contact, which include sharing household gadgets or hugging. The danger to fitness care people is on the whole from direct inoculation by way of needle sticks. even though saliva can incorporate small quantities of the virus, the virus can not be spread by using kissing. HIV can be transmitted from an infected character to some other via:

- Blood (along with menstrual blood),
- Semen,
- Vaginal secretions,
- Breast milk.
- sports That allow HIV Transmission
- Unprotected sexual touch
- Direct blood contact, such as injection drug needles, blood transfusions, accidents in fitness care settings or positive health care merchandise.
- mother to child (before or all through beginning) [2].
- HIV is understood to be transmitted handiest thru:
- contact of inflamed blood, semen, or vaginal and cervical secretions with mucous membranes.
- Injection of inflamed blood or blood merchandise.
- Vertical transmission

**Touch of Sexual Fluids or Blood with Mucous Membranes:**

The virus can not bypass via undamaged pores and skin. HIV can enter the frame via the mucous membranes that line the vagina, rectum, urethra, and possibly, on rare activities, the mouth. harm to a mucous membrane might also boom the threat of transmission of HIV but is not important for transmission to arise.

***Injection of infected Blood:***

HIV can be transmitted by using inflamed blood getting immediately into the bloodstream thru intravenous, intramuscular, or subcutaneous injection.

Blood-to-blood transmission occurs inside the following ways:- • Transfusion of infected blood and blood products and other blood recipients.

- Sharing of unsterilized hypodermic needles and syringes. The threat of HIV Transmission is depending on:
- The awareness of HIV in the infected fluid.
- the quantity of fluid brought into the body.
- The get admission to of the inflamed fluid to the t4 cells.

***Fluid with high awareness of HIV:***

- Semen,
- Blood and blood additives,
- Menstrual drift,
- Vaginal secretions,
- Pre ejaculatory fluid,
- Breast milk.

***Fluids with LOW awareness of HIV***

- Pus,
- Saliva,
- Tears,
- Urine,
- Feces,
- Vomiting,

- Nasal mucosa.

---

## SIGNS

Many people who are living with HIV don't have any obvious symptoms and signs in any respect. latest proof shows that among 70% to 90% of individuals who end up infected with HIV enjoy flu-like signs inside some weeks after contamination. The maximum common signs are a fever, a rash and a severe sore throat all taking place at the equal time. these signs in an otherwise healthful man or woman can also indicate current HIV contamination.

HIV inflamed sufferers may additionally get yeast infections (oral or vaginal) that do not go away or that occur often. frequent and severe herpes infections that cause mouth, genital, or anal sores are also commonplace.

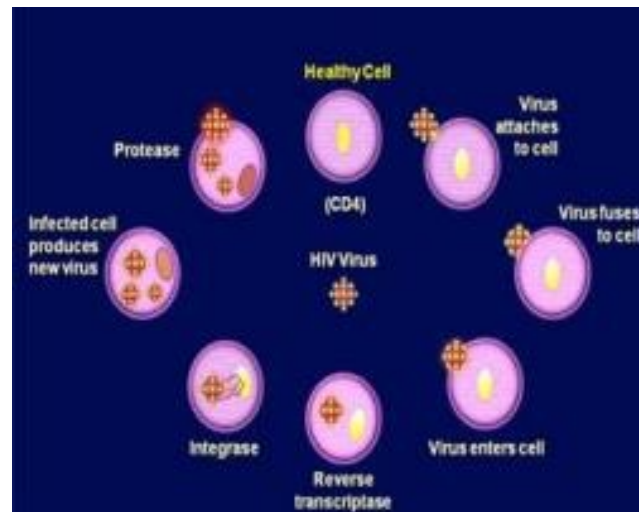
Herpes zoster (shingles) is much more likely to arise in infected sufferers. different pulmonary infections (pneumonia) or so known as abnormal mycobacterial infections may be severe for the one you love. women may additionally get pelvic inflammatory disorder that doesn't respond to treatment. The virus might also assault the worried machine (nerves, spinal twine or mind) and produce a spread of signs ranging from tingling in the feet and hassle taking walks to memory disturbances [3].

---

## SIGNS AND SYMPTOMS:

- huge lymph nodes or "swollen glands" that can be enlarged,
- for greater than 3 months,
- frequent fevers and sweats pores and skin rashes or flaky skin that does not depart,
- short-time period memory loss,
- slow increase or common illness in kids,
- cough and shortness of breath,
- seizures and shortage of coordination,
- hard or painful swallowing,
- confusion and forgetfulness nausea, cramps diarrhea or vomiting that do not leave,
- vision loss,
- Unexplained weight loss.

### *Life cycle of HIV AIDS*




---

## Entry o Human cell

Protein produced through the virus straight away after contamination, HIV is the best viruses which make new copies of itself within the human cells. This manner begins whilst this virus enters into cell that carries on its surface a protein that is cd4. The HIV virus stick with the cd4

receptor and permit them to fuse. HIV mainly infect immune cells i.e. T-helper cells that bureaucracy the frame immune gadget. HIV infects greater cells, therefore immune gadget will become vulnerable. opposite transcription there is an enzyme reverse transcriptase which facilitates in reverse Transcription. the main function of opposite transcriptase is conversion of viral RNA into DNA. After that DNA is transported to cell's nucleus in which insertion of DNA is finished by using enzyme integrase.

#### Transcription and translation

Now, transcription takes location. HIV virus converts HIV virus into messenger RNA.

Assembly, budding and maturation Copies of HIV collect together with newly made HIV protein and enzymes to shape new viral particle that are then bud off from the unique CD4 cellular. The enzyme protease ruin the lengthy chains of HIV protein into smaller portions. these newly virus has capacity to target and infect different CD4 cells [4].

### **Diagnosis**

HIV is maximum typically recognized by means of testing your blood or saliva for antibodies to the virus. lamentably it takes time in your body to develop those antibodies-usually as much as 12 week. A newer sort of test that assessments for HIV antigen, can fast affirm a analysis soon after contamination [5]. Following are the tests for detection of HIV AIDS:

#### **home test:**

A food and Drug administration-permitted domestic take a look at. To do the test, you swab fluid from your top and decrease gums. If the take a look at is wonderful, you want to see your health practitioner to verify the prognosis. If the test is poor, it desires to be repeated in three months to verify the results.

#### **checks To Tailor treatment:**

if you get hold of a analysis of HIV/AIDS, several types of exams can be done. those assessments include:

#### **CD4 be counted**

CD4 cells are a form of white blood cell it is especially centered and destroyed by means of HIV.

#### **Viral load:**

This take a look at measures the quantity of virus in your blood. research have shown that human beings with better viral loads typically fare more poorly than do those with a lower viral load.

#### **Drug resistance:**

This blood test determines whether the strain of HIV you have got will be proof against sure anti- HIV medications [6].

#### **Remedy:**

Antiretroviral drugs are used to treat HIV. those are the medication energetic in opposition to human immunodeficiency virus (HIV) that is a retrovirus. they are useful in prolonging and enhancing a nice of existence. Antiretroviral pills are labeled as following: Nucleoside opposite transcriptase inhibitors (NRTIs): Zidovudine (AZT), Didanosine, Lamivudine, Tenofovir. Nonnucleoside reverse transcriptase inhibitors:

Nevirapine, Delavirdine, Efavirenz. Protease inhibitors:

Indinavir, Nelfinavir, Amprenavir, Lopinavir, Atazanavir.

Nucleoside analogue reverse transcriptase inhibitors

(NRTIs) had been the first kind of drug to be had to deal with HIV infection in 1987. while HIV infects a mobile, it copies its very own genetic code into the cell's DNA, and the cell is then programmed to create new copies of HIV.

To breed, HIV should first convert its RNA into DNA using the enzyme opposite transcriptase. these inhibitors act like false building blocks and compete with the cellular's nucleosides, thereby preventing DNA synthesis.

Non nucleoside opposite transcriptase inhibitors (NNRTIs) started to be authorized in 1997. these also intervene with HIV's capacity to infect cells by using focused on opposite transcriptase. In evaluation to nucleoside analogue reverse transcriptase inhibitors, non nucleosides bind without delay to the enzyme [7].

---

### **HAART:**

It is exceedingly lively antiretroviral therapy. HIV also can be handled by way of HAART. it's far a aggregate of 3 capsules.

End traditionally, HIV prevention programs have centered broadly speaking on developing threat discount interventions for those at high threat for becoming inflamed with HIV. In 1999, a assessment of fifty five kingdom and town packages to the CDC for price range for HIV prevention packages demonstrated that only 18 (32.7%) listed HIV-inflamed individuals as a priority population for HIV prevention packages. even though there are hundreds of thousands of human beings in the u.s. at "behavioral risk" for HIV infection, transmission can arise handiest from individuals who are infected with the virus. because the wide variety of people with HIV maintains to boom due to art, so does the urgency for lifelong prevention techniques custom designed for them. battle of hobby: We declare that we haven't any battle of hobby.

---

**REFERENCES:**

1. Coffin, J. M. Molecular biology of HIV. In *The Evolution of HIV*, ed. K. A. Crandall, 1999; 3-40.
2. Friedland, G. and Klein R. Transmission of HIV. *Nejm* 1987; 317:18: 1125-1135.
3. Downs, A.M. and De I. Vincenzi. Probability of heterosexual transmission of HIV: relationship to the number of unprotected sexual contacts. European study Group in heterosexual transmission of HIV. *J. Acquir Immune Defic Syndr Hum Retroviral* 1996; 11(4): 388- 95.
4. Amborzia, J. and Levy J. A. Epidemiology, natural history and Pathogenesis of HIV Infection. In *Sexually Transmitted Diseases*, 3d ed, ed. K.K. Holmes, P.F. Sparling, P.A. Mardh, S.M. Lemon, W.E. Stamm, P. Piot, and J.N. Wasserheit, 1998; 251-58.
5. Palella, F.J., Delaney, K.M., Moorman, A.C., Loveless, M.O., Fuhrer, J., Satten, G.A., Aschman, D.J. and Holmberg, S.D. Declining Morbidity and Mortality among Patients with Advanced Human Immunodeficiency Virus Infection; *N England Journal of Medicine* 1998; 338: 853-860.
6. Pope, M. and Haase, A. Transmission; acute HIV-1 infection and the quest for strategies to prevent infection. *Natural Medicine* 2003; 9(7): 847-852.
7. Tripathi, K.D. *Essentials of Medical Pharmacology*, 6th edition, Jaypee brothers, medical publishers ltd., New Delhi; 798-810.